

WHAT IS CLAIMED IS:

1. A non-contact type tonometer including:

fluid blowing means which blows fluid against a cornea of an eye of an examinee;

5 intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure of the examinee's eye based on a result of detection of the deformed state;

10 pulsation detection means which detects pulsation of the examinee;

15 measurement timing determination means which can determine a measurement timing based on the detected pulsation to obtain a predetermined number of results of measurement on the intraocular pressure in synchronization with different phase points in the pulsation;

command signal input means which inputs a command signal for execution of the measurement; and

20 control means which outputs a control signal for controlling driving of the fluid blowing means based on the determined measurement timing and the input command signal.

25 2. The non-contact type tonometer according to claim 1, wherein the measurement timing determination means determines the measurement timing based on at least a peak point and a bottom point in the pulsation phase, and

the intraocular pressure measurement means calculates an average value of a measurement value in a first measurement timing corresponding to the peak point and a measurement value

10055944-013303

in a second measurement timing corresponding to the bottom point .

3. The non-contact type tonometer according to claim 2 further including output means which outputs the measurement value obtained in the first measurement timing, the measurement value obtained in the second measurement timing, and the average value of those measurement values so that those values are distinguishable.

4. The non-contact type tonometer according to claim 1 further including mode selection means which selects one of a first mode of obtaining a measurement result in the measurement timing corresponding to a peak point, a bottom point, or an arbitrary point in the pulsation phase and a second mode of obtaining a predetermined number of results of measurement in the measurement timing corresponding to the peak point and the bottom point respectively, and

wherein the measurement timing determination means determines the measurement timing based on the selected mode.

5. A non-contact type tonometer including:

fluid blowing means which blows fluid against a cornea of an eye of an examinee;

intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure of the examinee's eye based on a result of detection of the deformed state;

pulsation detection means which detects pulsation of the

examinee;

measurement timing determination means which determines  
a measurement timing to obtain a predetermined number of results  
of measurement on the intraocular pressure in synchronization  
5 with an intended phase point in the pulsation, the determination  
means determining a measurement timing based on a pulsation  
previously detected and sampled;

command signal input means which inputs a command signal  
for execution of the measurement; and

10 control means which outputs a control signal for controlling  
driving of the fluid blowing means based on the determined  
measurement timing and the input command signal.

6. The non-contact type tonometer according to claim 5,  
15 wherein the pulsation detection means detects and samples  
pulsation within a first detection time for a predetermined  
time or a predetermined number of periods of the pulsation,  
and the measurement timing determination means determines the  
measurement timing corresponding to pulsation occurring after  
20 the first detection time based on the sampled pulsation.

7. The non-contact type tonometer according to claim 6,  
wherein the pulsation detection means successively detects and  
samples the pulsation even after the first detection time, and  
25 when another pulsation is newly detected and sampled within  
a second predetermined detection time after the first detection  
time, the measurement timing determination means determines  
the measurement timing corresponding to the pulsation occurring

10055944-013802

after the first detection time based on the newly sampled pulsation.

5 8. The non-contact type tonometer according to claim 5 further including prediction means which predicts a deformation detection time required from output of the control signal until a predetermined corneal deformed state is detected,

wherein the measurement timing determination means determines the measurement timing based on the predicted deformation detection time.

10 9. The non-contact type tonometer according to claim 5, wherein the measurement timing determination means determines at least two measurement timings, one being a first measurement timing corresponding to first pulsation and the other being a second measurement timing corresponding to second pulsation occurring after the first pulsation, based on a sampling result on the pulsation that occurred earlier than the first pulsation.

15 10. The non-contact type tonometer according to claim 5, wherein the measurement timing determination means determines the measurement timing based on the previously detected and sampled pulsation when no pulsation is detected by the pulsation detection means.

20 11. A non-contact type tonometer including:

25 fluid blowing means which blows fluid against a cornea of an eye of an examinee;

intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure of the examinee's eye based on a result of detection of the deformed state;

5 first pulsation detection means which detects pulsation in a first position near an eyeball of the examinee;

second pulsation detection means which detects pulsation in a second position different from the first position;

10 pulsation phase shift detection means which obtains a phase shift between the pulsations detected by the first and second pulsation detection means respectively;

15 measurement timing determination means which determines a measurement timing based on the obtained pulsation phase shift and a detection result by the second pulsation detection means;

command signal input means which inputs a command signal for execution of measurement; and

20 control means which outputs a control signal for controlling driving of the fluid blowing means based on the determined measurement timing and the input command signal.

25 12. The non-contact type tonometer according to claim 11 further including correction means which corrects, when the pulsation detected by the second pulsation detection means has changed, the determined measurement timing based on a period of the changed pulsation.

13. The non-contact type tonometer according to claim 11,

10055944-012002

wherein the measurement timing determination means determines the measurement timing based on the previously detected pulsation by the first pulsation detection means so that intraocular pressure measurement is executed in synchronization with an intended phase point in the previously detected pulsation.

14. The non-contact type tonometer according to claim 11, wherein the measurement timing determination means determines the measurement timing based on the sequentially detected pulsation by the second pulsation detection means.

15. A non-contact type tonometer including:  
fluid blowing means which blows fluid against a cornea of an eye of an examinee;

intraocular pressure measurement means which detects a deformed state of the cornea caused by the blown fluid and determines intraocular pressure based on a result of detection of the deformed state;

first pulsation detection means which detects pulsation in a first position near an eyeball of the examinee;

second pulsation detection means which detects pulsation in a second position different from the first position;

measurement timing determination means which determines a measurement timing based on the previously detected pulsation by the first pulsation detection means so that the intraocular pressure measurement is executed in synchronization with an intended phase point in the previously detected pulsation, and information means which informs that a period of the pulsation

10055944-012002

detected by the second pulsation detection means after  
determination of the measurement timing has changed.

10055944-042003